REMARKS

Status of the Claims

Claims 17-43 are pending. Claim 17 is the only independent claim. Claims 40-43 are withdrawn because they are directed to non-elected subject matter pursuant to the restriction requirement dated June 15, 2009. In this Response, claims 17 and 20-39 have been amended and claims 18-19 have been cancelled. Support for the claim amendments exists at least in previously presented claims 17 and 19 and at page 4, paragraph [0014]; page 6, paragraphs [0021] and [0024]; and Table 1, Alloy 3 of the specification. As such, no new matter has been added.

Applicants respectfully request the Examiner to reconsider and withdraw the rejections in view of the foregoing amendments and the following remarks.

Specification and Abstract

The Office Action objects to the spelling of aluminum as "aluminium." Applicants submit concurrently herewith a substitute specification including a marked-up copy changing "aluminium" to "aluminum." Applicants have also correspondingly corrected any instances of "aluminium" in the abstract and claims. No new matter has been added. Accordingly, withdrawal of the objection to the specification is respectfully requested.

Claim Objections

The Office Action objects to the phrase "an element or element group" in claim 17. As suggested by the Examiner, claim 17 has been amended to eliminate "an element or element group" and recite "at least one element." Accordingly, withdrawal of the claim objection is respectfully requested.

Claim Rejections Under 35 U.S.C. § 103

Claims 17-18, 20-29, and 31-39 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over JP 9-279280 ("Okita") in view of Sanders, "Aluminum and Aluminum Alloys," Kirk-Othmer Encyclopedia of Chemical Technology, 2002 ("Sanders"). Applicants respectfully disagree with this rejection; therefore, this rejection is respectfully traversed.

The presently claimed cast aluminum alloy is suitable for thermally highly stressed cast parts. Page 1, paragraph [0002]. It comprises at least magnesium (Mg), silicon (Si), scandium (Sc), titanium (Ti), zinc (Zn), and aluminum. In particular, ***the Mg content is 3.0-6.0 % by weight.*** The Si content is > 1.0 - 4.0 % by weight. The Sc content is 0.01 - < 0.5 % by weight. ***The Ti content is 0.005 - 0.2 % by weight. The Zn content is 0-0.05 % by weight.*** The alloy may also comprise 0 - 0.5 % by weight of at least one element selected from the group consisting of zirconium (Zr), hafnium (Hf), molybdenum (Mo), terbium (Tb), niobium (Nb), gadolinium (Gd), erbium (Er) and vanadium (V); 0 - 0.8 % by weight manganese (Mn); 0 - 0.3 % by weight chromium (Cr); 0 - 1.0 % by weight copper (Cu); 0 - 0.6 % by weight iron (Fe); and 0 - 0.004 % by weight beryllium (Be). However, the total amount of impurities is not more than 0.5 % by weight and no single impurity is present in an amount of more than 0.1 % by weight.

In contrast, Okita discloses an Al-Mg-Si alloy including 0.2-2.0 % by weight Mg and a variety of other elements. The alloy also includes inevitable impurities. Abstract.

Okita, in combination with Sanders, does not render the presently claimed alloy obvious because the combination does not disclose or suggest each and every element of independent claim 17. Okita, in combination with Sanders, does not disclose or suggest the ***Mg content of 3.0-6.0 % by weight*** set forth in independent claim 17. Okita utilizes significantly less Mg. The alloy of Okita includes only ***0.2-2.0 % by weight Mg***. One of ordinary skill in the art would not have been motivated or had a reasonable expectation of success in increasing the Mg content beyond the range disclosed by Okita because Okita teaches away from increasing the Mg content above 2.0 wt %. According to Okita, when Mg content is more than 2.0 wt %, weldability, workability and corrosion resistance of the alloy deteriorate. Paragraph [0014]. Sanders does not correct the deficiencies of Okita because Sanders is merely cited for allegedly disclosing that "aluminum alloys contain Zn as an impurity in an amount below 100 ppm." Office Action at page 4.

Therefore, for at least the reasons discussed above, withdrawal of the obviousness rejection over Okita in view of Sanders is respectfully requested.

Claims 17-29, 31-33, 36-37, and 39 stand rejected as allegedly unpatentable over EP 1138794 ("Spanjers et al.") in view of Lyle et al., "Aluminum Alloys," Ullmann's Encyclopedia of Industrial Chemistry, 2000 ("Lyle et al."). Applicants respectfully disagree

with this rejection; therefore, this rejection is respectfully traversed.

Spanjers et al. discloses an aluminium-magnesium casting alloy having the following composition in weight percent: 2.7-6.0 Mg; 0.4-1.4 Mn; ***0.10-1.5 Zn***; 0.3 max. Zr; 0.3 max. V; 0.3 max. Sc; 0.2 max. Ti; 1.0 max. Fe; and 1.4 max. Si. Page 3, paragraph [0012].

Spanjers et al., in combination with Lyle et al., does not render the presently claimed alloy obvious because the combination does not disclose or suggest each and every element of independent claim 17. Independent claim 17 requires ***0-0.05 % by weight Zn***. Spanjers et al. utilizes significantly more Zn. The alloy of Spanjers et al. includes ***0.10-1.5 % by weight Zn***. One of ordinary skill in the art would not have been motivated or have had a reasonable expectation in reducing the amount of Zn in Spanjers et al.'s alloy because Spanjers et al. teaches away from using less Zn. According to Spanjers et al., the improved properties of its alloy result from the combined additions of Mg, Mn, ***and Zn in the given ranges***. Page 4, paragraph [0018]. Lyle et al. does not correct the deficiencies of Spanjers et al. because Lyle et al. is merely cited for allegedly disclosing that "commonly produced aluminum alloys contain Cr as an impurity in an amount between 0.005-0.020." Office Action at page 7.

Therefore, for at least the reasons discussed above, withdrawal of the obviousness rejection over Spanjers et al. in view of Lyle et al. is respectfully requested.

Claims 17-23, 28-33, 35, and 38-39 stand rejected as allegedly unpatentable over U.S. Patent No. 5,055,257 ("Chakrabarti et al.") in view of Sanders and Lyle et al. Applicants respectfully disagree with this rejection; therefore, this rejection is respectfully traversed.

Chakrabarti et al. is directed to special aluminum alloys adapted to superplastic forming at elevated temperatures. Col. 1, lines 14-17. In particular, Chakrabarti et al. is directed to the inclusion of small but effective amounts of the element scandium in aluminum alloys. Col. 2, lines 12-16. In addition to scandium, it is preferred that the aluminum alloy contain one or more elements which are in solid solution at superplastic forming temperature and which, in combination with Sc, lower its flow stress at superplastic forming temperature. Accordingly, the aluminum alloy contains selected amounts of one or more of the elements magnesium, silicon, copper, silver, germanium, lithium, manganese, or ***zinc in an amount, typically 0.1% or more***, that provides at least

some of the element in solid solution at superplastic forming temperature and which alters the flow stress of scandium-containing aluminous metal at superplastic forming temperature. With regard to ***zinc***, the amount broadly stated is ***up to 10% or 20%***. Col. 3, lines 9-25.

According to Charabarti et al., constituents (intermetallic compounds) or phases which are insoluble at superplastic forming temperature can interfere or cause defects in superplastic forming. Accordingly, elements are preferably avoided in amounts or in combinations, which favor formation of constituents at superplastic forming temperature. Col. 3, lines 39-45. Examples of elements which can form intermetallic compounds and phases which interfere with superplastic forming are Ca, ***Ti***, V, Cr, Fe, Co, Ni, cerium, and the rare earth elements and the refractory elements such as Ta, W, Re, Mo, and Nb. Col. 3, lines 58-63.

Chakrabarti et al., in combination with Sanders and Lyle et al., does not render the presently claimed alloy obvious because the combination does not disclose or suggest each and every element of independent claim 17. Independent claim 17 requires ***both a Ti content of 0.005 - 0.2 % by weight and an optional Zn content of 0-0.05 % by weight***. However, Chakrabarti et al. does not disclose or suggest this recited combination of Ti content and optional Zn content. As discussed above, Chakrabarti et al. points to a ***significantly higher Zn content of between 0.1% and 10% or 20%***. Furthermore, as discussed above, Chakrabarti et al. ***teaches away from including Ti*** in its aluminum alloy because Ti is detrimental to superplastic forming. Neither Sanders nor Lyle et al. correct the deficiencies of Chakrabarti et al.

The Office Action cites Sanders for correcting the deficiencies of Chakrabarti et al. with regard to Ti and Zn content, however, Sanders does ***not*** correct these deficiencies. Sanders is cited as allegedly disclosing that "aluminum alloys contain Ti and Zn as an impurity in an amount below 100 ppm." Office Action at page 8. Sanders does not make this disclosure. Rather, Sanders discloses that aluminum ***metal*** contains trace impurities such as Cu, Mn, Ni, Zn, V, Na, Ti, Mg, and Ga, most of which are present in quantities substantially below 100 ppm. Page 305. Even if the Office Action's alleged proposition regarding aluminum ***alloys*** were true, it has no bearing on Chakrabarti et al. as Chakrabarti et al. teaches away from including Ti and utilizes a significantly higher Zn content.

Lyle et al. does not correct the deficiencies of Chakrabarti et al. because Lyle et al. is merely cited as allegedly disclosing that "commonly produced aluminum alloys contain Cr as an impurity in an amount between 0.005-0.020." Office Action at page 9.

Therefore, for at least the reasons discussed above, withdrawal of the obviousness rejection over Chakrabarti et al. in view of Sanders and Lyle et al. is respectfully requested.

Conclusion

Without conceding the propriety of the rejections, the claims have been amended, as provided above, to even more clearly recite and distinctly claim Applicants' invention and to pursue an early allowance. For the reasons noted above, the art of record does not disclose or suggest the inventive concept of the present invention as defined by the claims.

In view of the foregoing amendments and remarks, reconsideration of the claims and allowance of the subject application is earnestly solicited. In the event that there are any questions relating to this application, it would be appreciated if the Examiner could telephone the undersigned attorney concerning such arguments so that prosecution of this application may be expedited.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket # 056226.57663US).

Respectfully submitted,

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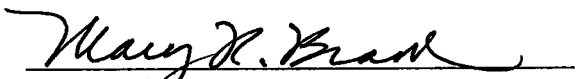

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